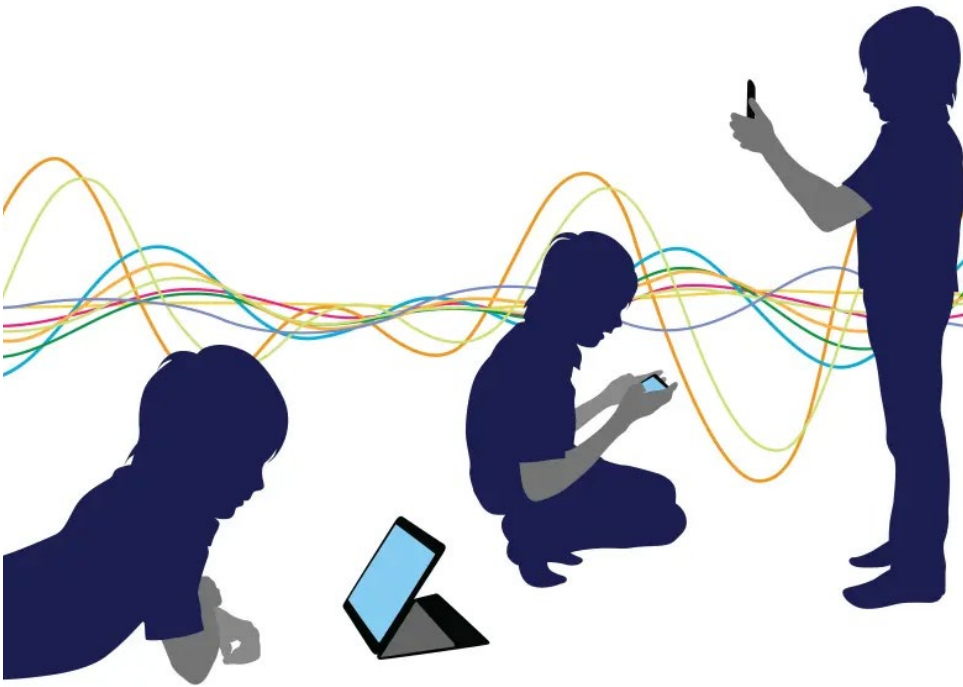


Digital Learning Done Right: Engaging Students With Research-Backed Tech



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DigitalVision Vectors



Sonia Pulido for Education Week

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EDITOR’S NOTE

Digital learning is most powerful when it is guided by research, clear goals, and strong instructional design. These articles show what that looks like in practice, from esports programs that build collaboration and engagement to robotics initiatives and coding lessons through platforms like Minecraft. Educators are using technology to deepen learning, teach responsible digital habits, explore virtual and remote learning models, and modernize career and technical education with tools connected to real-world skills. Emerging technologies like AI are also being integrated thoughtfully to support creativity, problem-solving, and personalized learning. Together, these stories show that when technology is used intentionally and grounded in evidence-based practice, digital tools can expand opportunity, boost engagement, and prepare students for a tech-driven world.

Published February 09, 2026

‘Esports Are a Game-Changer’: How This Leader Got Buy-in for Student Gaming

By Olina Banerji

On a flight home around Thanksgiving, Laurie Lehman got to chatting with the couple sitting next to her. The esports manager for the Albuquerque public school district was off the clock.

But she quickly found herself deep in conversation with her neighbors about her passion for esports and the numerous doors gaming has opened for students in her district.

Lehman didn't intend to turn friendly strangers into potential donors. But her passion for her job, and the esports program she's built from scratch, shone through—even 30,000 feet off the ground.

“I showed them the data and I talked about how important esports is to students' lives,” Lehman told Education Week in an interview. She plans to meet the couple formally to discuss a potential sponsorship deal for the district's esports program.

Interactions like this are how Lehman has built one of the most robust and well-funded school-level esports programs in the country—by convincing the right people that “esports are a game-changer.”

She's partnered with national and international esports federations, persuaded parents and principals alike that esports isn't just “playing video games in a dark basement,” and turned local and national businesses into repeat sponsors.

The likes of XFINITY and Microsoft have donated computers and gaming equipment; Pepsi has sponsored snacks and drinks for the district's homegrown esports expo, and Lehman has applied for large and small grants to fund stipends for over 100 esports coaches.

In total, since 2018, Lehman has raised \$120,000 for the program, of which \$40,000 has gone toward funding mini-scholarships for college-bound students who played esports in high school and sport athletes who competed in state-level championships.

The money has also helped upgrade computer labs in every school in the district. High schools with esports clubs have their own gaming labs; middle and elementary schools have multipurpose labs that can be used for esports.



Laurie Lehman, the esports district manager for New Mexico's Albuquerque Public Schools, speaks with Tremayne Webb, an esports coordinator, at Del Norte High School.

Education Week spoke to Lehman about her journey from her first career in anthropology to esports manager and mentor to other esports enthusiasts across the world.

The interview has been edited for length and clarity.

You've built up an admirable program. What's immediately on your radar for the new school year?

With esports, funding is always a challenge.

One of our goals is to get the program funded by the district. It isn't right now.

We will have to defer to the superintendent wanting to bring up our math and reading scores. When you are at the bottom of the nation in math and reading, you are going to be superfocused on that. Our new superintendent has built all these goals and guardrails about what she wants to achieve. She does support us, but they can't fund us right now with all the focus on math and reading. One of her goals is centered around social-emotional learning, and that's what esports is aligned to. Even if we got \$100,000 every year from the district, it would be great. But we need more than that, to pay for my salary and for the tech

guys who work with me to keep our gaming software updated.

We've also been trying get the New Mexico legislature to push for an esports day for the state. It's another way to recognize that esports can be a viable program that helps kids.

By your own estimate, now, over 1,500 APS students are now involved with esports. How did you make sure that program is attractive to a wide range of students?

We believe in an inclusive environment. We believe in a no-cuts program in schools [where every kid gets to stay on the team, regardless of their gaming ability]. Of course, you can have your A-team competing in state finals. There's nothing wrong with that.

And you have students on the B team trying to move up to learn.

But some kids want to join esports, not because they want to be on the A team. They want to make friends. They might want to get into shout casting, which is like in football, someone talks about the game as it's going on.

We have kids involved in creating videos for social media.

How are you turning esports into a viable career pathway?

There are quite a few courses that would relate to an esports CTE track. But they're listed under digital technology because that's the way they began years ago. So right now, there are tracks to data science, information technology, cybersecurity, computer science, physical computing. We want to add more CTE pipelines that are esports-specific.

We met with the district's CTE director over the summer. The first big course we want to work on is drones and drone training. That would be cool because students could use that in the job market right away after high school. We're talking to [the CTE director] about how we can get some money to get that going. At the end of the course, you have to take a test to show what you learned. It would be over \$1,500 per student. We don't have that kind of money. We want to have that kind of money, but right now, we don't.

Your own journey took you from anthropology to esports. How did that happen?

My love of anthropology took me around the world. I traveled and worked for a bunch of magazines with my ex-husband. When you study culture, you realize that pretty much all over the world, people are the same. We all have hopes and dreams and we all care about our families. And you might be living in the jungle in Panama or in New Guinea and you [can] see these people are not that different. It makes me believe that we need to work together more to see how we can help each other. And so, I got into education. And when I got into esports, it was an easy progression.

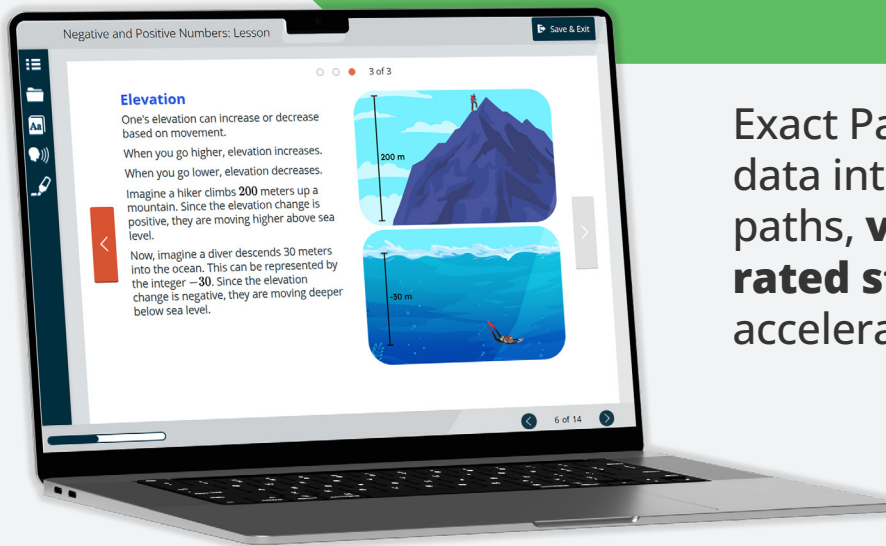
Esports opened up something to me. They gave me a sense of belonging. They gave me purpose, and every day, I am excited to think about what I can do to help these students and coaches. It's pretty amazing to find something like that later in your life. ■



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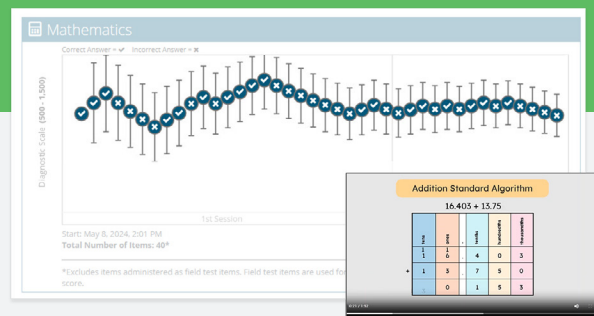
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How One District is Generating More Growth with Each Minute

Data is most valuable when it does more than just *measure* your impact. It should *clearly inform* your ability to *generate more impact*.



Shannon Carroll-Frey, Director of Secondary Teaching and Learning from Indiana's Center Grove Community School District (CGSD), shared what this looks like on a recent webinar:

1 More Independent Practice ≠ Better Intervention

CGSD faced challenges with previous intervention tools. "We had some unintentional misuse of those products, resulting in students spending hours and hours and hours trying to work on things independently—skills that they weren't ready to do on their own," Carroll-Frey said.

The district needed to personalize learning, surface student needs, and help teachers know when to step in. They chose to implement Exact Path, which has provided that structure.

2 Assessment Data Should Provide Insight and Direction

Diagnostic scores are useful, but teachers also need next steps. "Teachers were asking for a resource that would give them normed data about where students are and help them support students' learning pathways," Carroll-Frey said.

With Exact Path, teachers use data to identify skill gaps, individualize learning paths, analyze student responses, support interventionists, and gather clearer evidence of progress.

3 Teachers Stay in the Driver's Seat

In CGSD, middle school interventionists work under the direction of ELA teachers, so support stays connected to student needs. This helps the district serve students more intentionally without adding to the workload of classroom teachers.

4 Support From Edmentum

"It's because of [our Edmentum customer success manager] that I'm able to know that Exact Path can happen effectively in our buildings," said Carroll-Frey. "She shows up in our buildings and sits and looks and talks to teachers and asks 'how's this working?'" And those check-ins also show educators how implementation is going for their colleagues. "We've had more and more teachers who have said, 'Oh, that worked for so-and-so—I think I'm going to give that a try.'"

5 More Growth with Each Minute

Like most administrators, Carroll-Frey wants to see more than just usage data; she's looking for purposeful learning. "If I walk in and I see effective use: students having individualized learning paths, and teachers interacting with them about their success in that, or about areas where they need support to continue to move forward, that's what I want to see."



Watch the full webinar recording on edmentum.com

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Published January 22, 2026

How These Elementary Schools Are Teaching Students Good Digital Habits

By Jennifer Vilcarino

As the digital media landscape grows and changes—especially with the introduction of generative artificial intelligence—and students gain access to technology at increasingly younger ages, it's vital to teach them how to use digital tools safely and appropriately, educators and experts say.

“Technology is growing each and every day,” said Nicole Sandrowicz, the school-based technology specialist at Bailey’s Elementary School for the Arts and Sciences in Falls Church, Va. “We are starting with our youngest learners to build these skills so that when they do get to using the technology a little bit more advanced, they already have a basis of how to be a good person using this technology.”

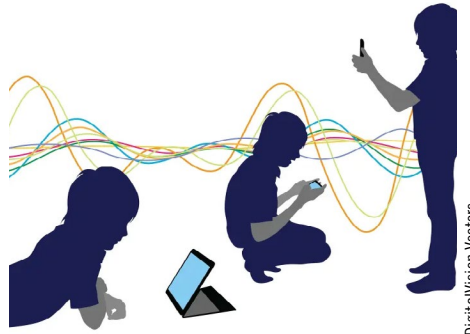
Sandrowicz spends one hour every week for the first month of the school year teaching K-2 students the basics of digital citizenship and then incorporates these skills throughout the academic year. This strategy has allowed students to adopt digital citizenship and literacy skills at an early age, she said.

Experts say elementary students need to be explicitly taught digital citizenship skills, like healthy media time limits, understanding that media can be human-made and generated by AI, and that not everyone or every piece of media online is safe to interact with.

According to a 2025 report by Common Sense Media, 40% of children have a tablet, and about 8% have a personal phone by the age of 2. Additionally, screen time for children ages 2 to 4 is an average of 2 hours and 8 minutes per day, the report showed.

At Bailey’s Elementary, educators make visuals, using material from Common Sense Media, to showcase how students can exhibit healthy screen time habits. For example, one graphic shows a student putting away an electronic device ahead of bedtime. Educators also talk to students about how there are websites and digital tools that show false information, which is why it’s important to pause and think about reliable sources, like a library or a trusted adult, said Jodie Safer, a STEAM teacher at Bailey’s Elementary.

Katie Davis, a professor in the Information



School at the University of Washington and the co-director of the Center for Digital Youth, said digital citizenship for students in grades K-5 is more about modeling appropriate boundaries and habits with digital tools than letting them test out these tools on their own.

For example, educators can model “habits like limiting their time [on a digital platform] and recognizing when they’ve had too much or if a particular content is overstimulating,” said Davis.

How to teach students to be kind online

Safer said the school is focused on teaching its youngest learners how to be kind online. For example, if students notice people cyberbullying others, Safer and her team are showing students how they can stand up for that person, or inform a trusted adult to help resolve the situation.

Safer uses Common Sense Media’s digital citizenship curriculum—Arms, Legs, Guts, Feet, Heart, and Head—to create more digestible lessons for students in kindergarten, first, and second grade. According to the Common Sense Media website, each character covers a different lesson:

- Arms ask: “How do we balance our time with technology?”
- Heart asks: “What are ways you can be kind online?”
- Guts ask: “How do you stay safe online?”
- Feet ask: “What footprints are you leaving online?”

- Legs ask: “How do you stand up for people you care about?”
- Head asks: “How do you know something you see or hear is true?”

Bailey’s Elementary holds a Digital Citizenship Week each year using Common Sense Media’s characters. Each student may dress in the color of one of the body parts, which then correlates to a specific practice or habit. For example, on the day of Arms, students can wear green and practice healthy habits around tech. In this instance, ‘Arms’ can put away digital devices when screen time is up. Sandrowicz tells students, “we have to put the device away, just like arms do,” when students need to return computers to their designated location in the classroom.

The role of AI in digital citizenship

Young students should also be learning about AI in age-appropriate ways, said Davis.

“In the early years, it’s more about [how] not everything is generated by a human, and how can we detect that,” she said.

At Henry P. Clough School in Mendon, Mass., K-4 students are also learning digital citizenship skills. Principal Liz Garden brings in a representative from the school’s district attorney’s office every year to talk to students about cyberbullying. In more recent years, these conversations have expanded to cover AI, she said.

For example, students learn about AI-generated images and how to tell them apart from real ones. For kids to realize that not everything they see online is an “actual real thing” is really “eye-opening” for them, said Garden.

Garden said students are coming into preschool and kindergarten already being “online and exposed to different apps,” so schools can’t afford to wait to address these topics with them.

“When I was in the 2nd grade, my world was so small,” said Garden. “Now my own children and my students, their worlds are huge, and it can be a great thing, but it also can be an overwhelming and scary thing as well,” she said. ■



Matt Rourke/AP

Pedestrians cross the street in the aftermath of a winter storm in Philadelphia on Jan. 26. Online learning has allowed some school systems to move away from canceling school because of severe weather.

Published January 26, 2026

How Remote Learning Has Changed the Traditional Snow Day

By Jennifer Vilcarino

As communities across the nation attempt to dig out from a massive winter storm, and brace for hazardous conditions that will linger throughout the week, states' and school districts' approaches to delivering instruction in severe weather—if they do it at all—vary greatly.

Some school systems immediately announced a pivot into remote learning, while others simply closed school, with no organized plans for online instruction.

As a result of the COVID pandemic, many school districts put in place technology protocols to allow them to provide lessons online.

Yet some states and school systems also restricted remote learning, questioning its overall value and whether it worsens inequities for students who aren't in stable home environments.

Over the past day, several states have been hit with snowfalls higher than 20 inches. One community in New Mexico reported 31 inches of snow. States and communities are also experiencing power outages, with stretches

“
Did we not learn from covid the instabilities of remote ‘learning?’”

ANDY K.

Facebook commenter

of the South, including Tennessee and Mississippi, feeling the most severe impact.

States and school districts have had different reactions to the winter storm. New York City Mayor Zohran Mamdani announced school buildings would be closed on Monday but that students would learn remotely.

The decision affected about 500,000 of the district's 900,000 students. Many students in grades 6-12 were already scheduled to be out of school because of a professional learning day.

“I am grateful to our school communities for the work they've done over the last several days—from stress-testing technology to securing buildings and getting virtual classrooms ready,” New York City Schools Chancellor Kamar H. Samuels said in a statement. “This was a difficult decision made with the safety of every family in mind, and I thank you for your flexibility.”

In New Mexico, Gov. Michelle Lujan Grisham declared a state of emergency, and the decisions on whether to close schools completely or engage in remote learning were left to individual districts, according to local reporting.

Debates about whether to call off schools entirely in the face of severe weather, or shift to online instruction, aren't new. Advocates for snow day cancellations argue that remote learning creates unequal learning opportunities. Advocates for online instruction see it as a viable option to keep students engaged academically, and they note that cancellations lead schools to tack on extra days at the end of the year.

Different ways states have reacted to the storm

In New Jersey, the state restricts the circumstances in which remote learning can be used. State law generally mandates students be in a classroom for the day to count toward the minimum days of instruction. If schools remain closed for three consecutive days, remote learning can count towards the minimum days of instruction, according to the law.

Parts of Texas were hit hard by Sunday's snowstorm, and the Dallas school system in response announced school closures on Monday and Tuesday. The district also said it was scheduling make-up school days. If more snow days occur, the school system can get a waiver from the Texas Education Agency to avoid having to add make-up days at the end of the school year, according to the Dallas Morning News.

Other districts are mixing both snow days and remote learning.

In northern Virginia, Fairfax County Public Schools Superintendent Michelle Reid said in a public statement, students were encouraged “to take their devices and materials home as a precaution, while emphasizing that [the district is] not shifting to remote learning and that we also value the importance of snow days.”

Parents have been receiving links for students to join online reading challenges and are encouraged to finish up incomplete assignments.

The availability of online learning options seems to have influenced district approaches to dealing with bad weather.

In an EdWeek Research Center survey of K-12 administrators and educators conducted in 2024, nearly 6 in 10 said the number of snow days their school systems had built into their calendars had remained unchanged over the previous year.

Respondents to a separate Education Week query on LinkedIn and Facebook offered a variety of views on the value of remote learning after weather events.

One said that in many cases of extreme weather, online instruction is not appropriate.

However, if weather affects roads but not infrastructure like power, then “remote learning to reduce the number of makeup days for the summer seems like a great option,” said the commenter, Brooke C. on LinkedIn.

But another said the pandemic offered lessons on tech-based learning—and not positive ones.

“Did we not learn from covid the instabilities of remote ‘learning?’” said Andy K. on Facebook. “Let the kids enjoy the snow. Give them work like submit a photo of a snowman you built, or write a paragraph about your snowball fight.” ■

Additional Resource 

View this article's charts

Published July 22, 2025

Is Virtual P.E. the Future?

By Jennifer Vilcarino

Physical education plays a big role in keeping kids active in an era dominated by screens. But as technology is increasingly incorporated into schools and classrooms, can it also be leveraged to get them moving?

While P.E. is important for ensuring kids get at least some physical activity, not all students look forward to the class. According to a 2024 Gen Youth report on physical education, some students feel a lack of skill or body confidence, don't have a variety of activities to choose from, or experience physical discomfort, all of which might contribute to their lack of enjoyment.

That's where technology—specifically virtual P.E. options—can come in. Ed-tech companies have been looking for ways to both increase student engagement and address the shortage or burnout of physical education teachers.

Using technology in P.E. is “meeting students where they're at,” said Brandy Lynch, a member of the Society of Health and Physical Educators (SHAPE) America board of directors and an associate professor and physical education program coordinator at the University of Central Missouri. SHAPE America is a nonprofit that sets P.E. standards and provides support for educators in the field.

“We can gamify different aspects of our curriculum, we can make it more personalized, we can make it more individual—but we have to know that technology has its proper place,” she said.

Students need exercise, but not all find it at school

Researchers recommend 60 minutes of daily physical activity for young children, but only 1 in 4 kids between the ages of 6 and 17 reach the standard, according to the Gen Youth report.

P.E. can help students reach that goal, but not all schools have robust programs.

While most states require students to participate in physical education, 31 allow substitutions for the credit, and 30 allow student exemptions, according to SHAPE America.

“A lot of times, physical education is seen



Konstantin Koekin/Stock

as something extra or something that's a little bit novel but not necessary or mandatory in our profession,” Lynch said. “I would say that we're the heartbeat of the school.”

One barrier to physical education in schools is the lack of certified P.E. teachers. SHAPE America conducted a survey of representatives of P.E. teacher-prep programs across the country and found that 42% said their program enrollments had declined in the last 10 years. When asked to consider future enrollment, 50% of respondents predicted future program declines.

The role screens can play in P.E.

One way to increase student engagement in physical education could be offering more choices through technology, said Joe Titus, co-founder and CEO of Hiveclass, a digital P.E. platform.

Hiveclass has created 1,800 standards-based physical education videos on 18 different sports or wellness activities, from dance to basketball, accessible in both English and Spanish. The product launched in 2022 and now operates in 26 states and across different types of schools, including charter, virtual, alternative education, and traditional public schools.

With Hiveclass, teachers could set up two smartboards with video instructions for differ-

ent activities students can choose from, Titus said. On one side of the classroom, students can learn dance. On the other side, students can learn basketball skills.

“The teacher can be a facilitator, helping both sets of students, and that makes it personalized,” he said.

Dan DeJager, who oversees secondary physical education for the San Juan Unified School District and was the 2019 SHAPE America National High School Physical Education Teacher of the Year, met with the founders of Hiveclass before it launched in 2020 to share ideas on the P.E. ed-tech space and eventually joined the advisory board.

“I almost look at it like—especially with what they have in the libraries—a Rosetta Stone where you can learn a language. Well, now you can learn a sport,” said DeJager.

A similar product called PLT4M focuses on health and fitness skills and offers teachers ways to track a student's progress. PLT4M was created in 2013 and now serves more than 1,000 school districts with over 500,000 students.

Since 2019, Molly Collins, a P.E. teacher at Pennfield High School in Battle Creek, Mich., has been using PLT4M in her classes, allowing students to use the app to select an activity or sport. She then tracks how long a student spends on an activity to curate specific goals and measure progress for each student throughout the academic year.

Collins said her favorite part about PLT4M is the opportunity to show students their progress because it makes them excited about their fitness journey.

“That’s what you’re looking for—[students] to start to take ownership through the improvements,” she said.

Technology can’t replace P.E. teachers, advocates say

Lynch said technology solutions like PLT4M or Hiveclass can play a role in P.E. classes if they include options a P.E. teacher cannot offer.

A video, for example, can demonstrate to students how their peers practice a skill or do an exercise—“there’s representation,” she said.

Chief Product Officer and Co-founder Paul Suhr told Education Week that Hive-class content intentionally includes models and actors that are diverse in ethnicity, body type, and age.

Some educators are concerned about the potential for virtual P.E. ed tech to replace certified P.E. teachers. Lynch, who teaches P.E. teacher-candidates, believes the technology is only a tool, not a replacement.

“My students know how to teach quality physical education without the use of technology, and then they also know how to use it to augment the quality teaching that is already occurring,” said Lynch.

Collins agrees that technology like PLT4M can’t replace P.E. teachers, but says students will search ways to exercise on their own.

For example, Collins has seen students ask ChatGPT to curate workouts. She wants students to learn from her classes instead of from unvetted sources online.

“If we’re not educating kids on how to use technology well, the proper channels and the proper tools, they’re going to go seek it out elsewhere,” she said. ■



Wesley Hitt for Education Week

Students in Bentonville public schools' Ignite program work on projects during class in Bentonville, Ark. The program offers career-pathway training for juniors and seniors in the district.

Published November 20, 2025

How Schools' CTE Offerings Are Going High Tech

By Arianna Prothero

Technology is playing a much bigger role in school districts' career and technical education programs, a shift that experts say started during the pandemic and is continuing as the use of artificial intelligence expands across all sectors of society.

Over the past five years, the most popular category for new CTE programs in schools was for careers in digital technology, IT, AI, and cybersecurity, according to a survey of teachers, principals, and district leaders connected to career and technical education. The survey found that 28 percent of educators said their school or district had started these kinds of technology programs sometime within the past five years.

Experts say the creation of those new programs is driven largely by technological advances, such as the rapid development and adoption of AI-powered technologies, the increasing frequency and sophistication of cyberattacks, and the expanding use of digital technologies in the workplace.

In addition to new offerings in technology-related fields, other career areas where new programs have taken root over the past five years include education; arts, entertainment, and design; and construction, the survey found.

As it is, the three most commonly offered CTE pathways in schools and districts are digital technology, IT, AI, and cybersecurity; construction, including architecture and civil engineering; and hospitality, including events, tourism, and culinary arts, according to the EdWeek Research Center survey.

In addition to rising interest in tech-focused CTE programming, all career and technical education programming is becoming more technology-oriented, said Michael Connet, the associate deputy executive director for outreach and partnerships for the Association for Career and Technical Education. He spoke with Education Week recently as part of a special report on AI in CTE.

“By virtue of the hands-on, experiential nature of CTE instruction, there hasn’t been historically a major role for educational technology in CTE classrooms,” he said. “That all changed because of the pandemic when teachers had to go remote and use the learning-management system for communication and virtual learning. Now that we’re back in person fully and doing things that are hands-on, ed tech has stayed with them.” ■

Additional Resource

View this article's charts





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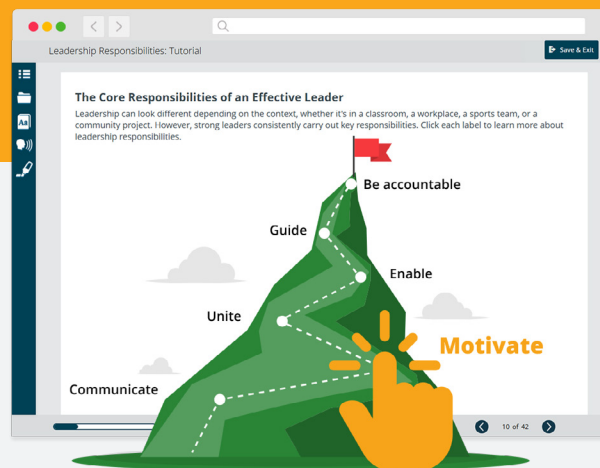
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How to Get Outcomes with Digital Curriculum

Delivering student learning outcomes is job one for district decision-makers, but how can leaders know their curriculum will lead to meaningful results? In a recent webinar, an expert panel explained what to look for:



1 Valid Evidence of Impact

The first question to ask, says Dr. Michelle Barrett, SVP of Research, Policy & Impact for Edmentum, is “What outcomes are expected when the program is implemented as intended, and is it in alignment with the problems we’re trying to solve?”

If the product aligns with a district’s objectives, leaders should then look for third-party-validated research data to back up those outcomes.



In an attendee poll, **>50%** of participants said “research-based design and/or efficacy research” was the most important consideration when selecting edtech for their school or district

2 Comprehensive Evaluation of Quality

Digital curriculum should be judged by more than content coverage alone, shared Pam Shaw, Director of K-12 Quality Assurance for Quality Matters. Pedagogy, learning design, accessibility, and meeting individual student needs across different learning environments are critical factors.

3 Active Engagement, Not Passive Device Use

It’s important for leaders to identify the difference between purposeful digital learning and passive device use, says Dr. Barrett.

For example, effective digital tools should support coherent differentiation rather than simply adding more time online. “Teaching to the middle really does not serve students well,” she explains.

4 Desired Academic Outcomes—And Beyond

Edmentum’s efficacy research has shown evidence that programs like Exact Path and Edmentum Courseware significantly improve math and literacy achievement. But looking beyond academic achievement is also valuable, shares Dr. Barrett. For example, research on Courseware demonstrated a statistically significant reduction—**23%**—in absenteeism for students who used the program.



In an attendee poll, participants were asked to name the most important outcomes in their school or district. **>50%** said attendance and engagement are most important, with test scores rating as the #2 response.

5 Sustained Positive Impact

“Educators, families, and students are tired of ‘flash in the pan’ initiatives,” says Tatiana Ciccarelli, Sr. Director of Strategic Partnerships for Edmentum. Ultimately, choosing curricula and resources that reliably and consistently deliver outcomes gives a program staying power.



Watch the full webinar recording on edmentum.com

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Published September 04, 2025

How One Teacher Built a STEM and Robotics Program On a Shoestring Budget

By Alyson Klein

Jennifer Watkins believes in the power of robotics to make math and science come alive for students.

But robots don't come cheap, and Watkins doesn't have any dedicated funding for her STEM program for 3rd through 8th graders in her rural Arkansas district.

So, with support from her administration and in partnership with her colleague, Emily Crabtree, who teaches gifted education, Watkins has figured out how to give her students hands-on engineering and robotics experiences on a very tight budget.

"I want for them to see that the science [concepts] that they're learning about are things that they can hold in their hands," said Watkins, who teaches in the Fouke School District, in southwestern Arkansas. "The electricity that they're learning about is something they can produce."

Watkins added: "I want for them to see that they have the power to create the video games they love to play. I need for them to understand that that's coding and that somebody, some programmer somewhere, made that sound and that graphic and that response and all of those things happen and that they—my kids—could also do that."

To give her students those learning opportunities, Watkins has had to figure out how to stretch very limited dollars by finding inexpensive—or free—tech tools that can help her students see coding, electrical circuits, and augmented reality in action.

Here are some of her favorite, relatively inexpensive tech tools and classroom approaches, which she shared with fellow educators in a session at the ISTE+ASCD national conference in San Antonio this summer:

3D printed cubes to see and feel science

One ed-tech product, Merge Cubes, combined with a device such as a Chromebook, gives students the chance to interact with virtual simulations of the earth's core, the solar system, the inside of a frog's body, and other science concepts. Each cube retails for about



Kaylee Domzalski/Edmentum Week

Jennifer Watkins, who runs a STEM program for the Fouke school district in rural Arkansas, shared how she uses inexpensive ed-tech tools to help students understand robotics at the ISTE+ASCD annual technology and learning conference this summer.

\$30 on Amazon.

Educators can sometimes get cubes for free at conferences like ISTE, produce them using a 3D printer, or get samples from the creators' website using cardstock, and then have their students put them together. The app that powers the cubes has both paid and free versions.

"Sitting in a desk learning about the Earth, [students] don't care, but whenever they can hold it and see it firsthand, it makes it relevant to them," Watkins said.

Making devices to teach how electrical circuits work

Makey-Makey devices, which retail for around \$50, allow students to use a circuit board, clips, and a USB cable to make just about anything—a banana, a potato—into a makeshift keyboard.

Watkins uses it to teach how electrical circuitry works. At the ISTE+ASCD conference session, she had four oranges hooked up to it and demonstrated how she could create a closed circuit by putting her hand on one of the oranges and turning the others into a piano.

They're also helpful for teaching coding.

Watkins will have her students use Scratch—a student-friendly coding language—to create a game. The Makey-Makeys can turn just about anything—cardboard, Play-Doh—into a gaming console. Students can then play the game they've created without ever touching a traditional keyboard, even though they are playing it on a computer.

That takes design thinking, Watkins said.

"I want my kids to be able to mess up," she emphasized. "I try really hard not to tell them how to do it. I try to kind of throw it in front of them and let them play around. I tell them all the time, 'I really hope you get it wrong the first time, because then you'll get to improve upon it.'"

Teaching elementary and middle school kids how to code

BBC micro:bits, a small device, which retails for around \$30, is also great for teaching coding, Watkins said. She will pre-program it for younger students and let them play a class-wide, digital version of rock, paper, scissors. She lets middle schoolers do the coding on their own, using tutorials on a free website.

She's used it to let students code informa-

tion about themselves as an icebreaker and made herself a micro:bit nametag to get students excited about using the device.

Building things to learn engineering skills

A building kit—which can be purchased for about \$20—is great for younger students building creations with cardboard and can help introduce engineering skills without a digital component, Watkins said. There’s a saw for cutting cardboard that’s safe for even small kids, a screwdriver that can help students connect two pieces, and a perforating tool to make folding easy.

“Kindergarten can use these,” Watkins said. “It’s not going to cut them. It’s very safe.”

How to use STEM products to raise money

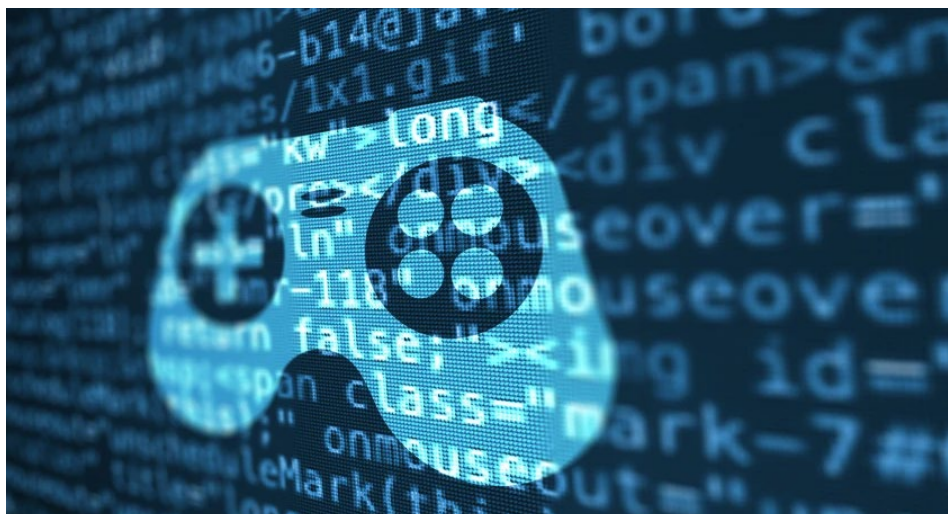
Watkins and her colleagues also found some creative ways to generate money.

For instance, Watkins bought a 3-D printer and filament (a type of plastic) for around \$1,000.

Then she used those products to create small figurines her students and their families could buy, with prices ranging from about 50 cents to around \$8. She created small panthers (the school’s mascot), dragons, and dragon eggs, and sold them at events like Field Day. The endeavor ultimately helped generate about \$6,000 over two years. Watkins pumped those profits back into the district’s STEM program.

The district also funded a week-long STEM summer camp at a low cost per family. A local parent organization helped finance scholarships available for needy students. Watkins used part of the tuition money to purchase tools she could include in the camp and then repurpose for the classroom.

Most recently, the district secured a \$10,000 grant from the Arkansas STEM coalition to help purchase other supplies. ■



DigitalVision Vectors

Published February 27, 2025

How Playing Minecraft Can Help Students Learn Coding Skills

By Alyson Klein

Gamifying learning is all the rage these days, especially when it comes to ed-tech platforms. But the effect that approach has on learning can range significantly, experts say.

Some products hook students with authentic, fun, highly interactive embedded games in which kids are also learning key skills.

Others simply have students answer math or reading questions to move around a digital game board or through a virtual landscape. They are not highly interactive or as fun as the others.

The technical term for that latter approach? “Chocolate covered broccoli,” noted Richard Culatta, the CEO of the International Society for Technology in Education and ASCD.

“I often roll my eyes at gamified learning,” Culatta said. “There are a lot of attempts to gamify education. And usually, those attempts just add irrelevant game elements to something that isn’t really fun in the way a game is.”

Some ed-tech providers, however, have figured out how to help students master key skills through game play, he said.

A prominent example for middle and high schoolers: A partnership between Prodigy Learning and Minecraft that offers students the opportunity to earn industry-recognized credentials while playing one of the most popular digital games.

“There are a lot of attempts to gamify education. And usually, those attempts just add irrelevant game elements to something that isn’t really fun in the way a game is.”

RICHARD CULATTA

CEO

International Society for Technology in Education and ASCD

Students can use Minecraft Education—which employs the sandbox building game—to get credentials in cybersecurity, coding, and AI. Students who participate in the coding pathway can earn citations for their fluency in Java and Python, two in-demand coding languages. (Non-profit organizations, such as Code.org, also offer teachers and students low cost or free options to help students learn key computer science skills.)

Students can explore cybersecurity in Minecraft by studying topics like digital citizenship, networking, authentication, backups, and cryptography. Students take a capstone assessment to show their knowledge. Prodigy, a game-based learning company, recently opened up an AI pathway that teaches students about topics such as algorithms, coding in AI, how AI is used in the real world, and AI ethics.

Coding in Minecraft has statewide contracts in Alaska, North Carolina, and Washington state, as well with individual school districts. In Washington state, all districts have access to the program and can decide whether and how to use it. (Georgia took a similar approach to a game-based assessment it rolled out several years ago.)

Schools are trying to help students get industry credentials sooner

The opportunity to earn coding credentials is a big one for districts in the Evergreen State, particularly those that serve isolated communities, said Chris Reykdal, Washington state’s superintendent of public instruction.

“We are facing a labor shortage here that’s going to persist for a couple of decades,” Reykdal said. “We’re trying to figure out ... how do we get [kids] access to credentials sooner, in case their choice is to get to the labor market sooner?”

Another big part of the appeal: These programs can be implemented even by teachers who don’t have a robust background in computer science, Reykdal added.

“In our rural communities, we think this is the best way for them to plug something like this into their schedule and actually offer it, because they don’t need a full-blown computer science certified teacher,” he said.

And Reykdal appreciates that the coding and other computer science skills are imparted through a game many kids play on their own time.

“The platform itself is just very unique. If you ask students to sit in their first computer science course, they learn basics” that can feel very abstract, Reykdal said. “When you say ‘you’ve been playing this game for 10 years of your life, how would you like to [use it to] create code? The engagement level is totally different.” ■



Sonia Pulido for Education Week

Published October 02, 2025

How Playing Minecraft Can Help Students Learn Coding Skills

By Larry Ferlazzo

AI in High School English

Amanda Muffler is in her 10th year teaching secondary English. She is a current Utah Teacher Fellow:

As a secondary English teacher, artificial intelligence is going to be in my classroom regardless of if I embrace it or not. My team and I have decided, for our own sanity, to embrace it—loosely. This may change as AI continues to grow and adapt and as our curriculum may change and adapt over time as well.

For now, we use AI primarily as a brainstorming tool for help with thesis and body-paragraph ideas.

In our district, we are tied to a set curriculum, and the essay prompts are predetermined within the curriculum. Luckily, so far, students who attempt to use AI to write their essays are easily identified because AI isn't able to use the evidence the curriculum requires, and if it is able to include the evidence, it isn't done accurately or well.

My team and I have presented using AI as a brainstorming tool and shown students that attempting to use it beyond that won't give them a well-written essay anyway so it isn't worth the effort. So far, this is working well in my classroom. My students have put in our essay prompts on various AI platforms as a starting point to get an idea of how they

could answer the prompt or what they could include in their thesis statements.

My students have also given AI platforms their thesis statements and asked for a supporting body-paragraph sentence idea. I think this is working well, again—so far, because it really isn't doing much of the writing for them in my opinion. It might help give them ideas, but my students are still reviewing and revising what AI is presenting to them, synthesizing evidence from various texts to support the thesis they create, and explaining the evidence they incorporate in their own words.

English teachers emphasize that writing is a process, and that process includes various revisions along the way. I think introducing AI as just one minor step in the process has been a successful way of embracing something that would be present regardless and doing so in a safe way that my students and I are both comfortable with.

'A Great Discussion Partner for Students'

Danielle Macias teaches English in Utah. She was a district innovative learning coach and an instructional technologist at the Utah state board of education:

Since its release in 2022, ChatGPT has been used by professionals in boardrooms to teachers in classrooms. However, ChatGPT can also be a great discussion partner for students.

1. Debates and Persuasive Writing

Challenge students to engage in debates or persuasive-writing exercises by taking opposing viewpoints. Use the template: "ChatGPT, argue for/against [a controversial topic]. Prepare a persuasive response to counter my points and strengthen your argument."

Students can prompt insightful discussions, encourage varied perspectives, and create a dynamic and engaging learning environment.

2. Literary Analysis

Encourage students to discuss and analyze literary works. Use the prompt: "ChatGPT, provide an alternative interpretation of [a specific literary work]. Engage in a discussion with me to critically evaluate both interpretations and support your analysis with evidence from the text."

Discussing alternative viewpoints helps students analyze evidence, question assumptions, and deepen their understanding of complex literary themes.

3. Historical Events

Enhance students' understanding of historical events. Use the prompt: "Imagine you are a historian studying [a historical event]. Engage in a conversation with me, examining various factors that might have contributed to the event's outcome and discussing its broader impact."

This exercise cultivates critical thinking by encouraging students to go beyond simple narratives and explore historical complexities.

4. Scientific Inquiry

Utilize ChatGPT as a virtual science partner for scientific discussions. Use the prompt: "You conducted an experiment on [a scientific topic], and I will review your findings. Engage in a scientific discussion with me, critically analyzing the results and considering potential sources of error or alternative conclusions."

By defending their experiments, students strengthen their scientific reasoning and learn to identify potential flaws in their methodologies.

5. Socratic Questioning

Teachers can model Socratic questioning techniques using ChatGPT to stimulate critical thinking. Use the prompt: "Use Socratic questioning techniques to explore the complexities of [a philosophical or ethical issue]. Encourage me to provide well-reasoned answers and challenge my responses with follow-up questions."

By asking and answering thought-provoking questions, students develop their analytical and reasoning skills.

6. Events Analysis

Engage students in analyzing events. Use the prompt: “Select a most recent news article on [a current event]. Engage in a conversation with me to critically analyze the information presented, assess the credibility of sources, and consider different perspectives on the topic.”

Engaging in discussions with ChatGPT requires students to think critically about the credibility and reliability of the information presented, enabling them to form well-informed opinions.

7. Creative Writing and Brainstorming

Encourage students to use ChatGPT as a creative-writing partner. Use the prompt: “Have a conversation with me to brainstorm creative ideas, explore various plot directions, and challenge me to think outside the box.”

Students can learn to evaluate different narrative choices and identify the most compelling options.

8. Philosophical Inquiries

Engage with ChatGPT on philosophical questions. Use the prompt: “Explore the concept of [a philosophical topic] with me, engaging in a philosophical dialogue. Encourage me to present my perspective while you critically assess its reasoning and offer your own philosophical insights.”

This allows students to delve into complex concepts, challenge assumptions, and refine their ideas on fundamental questions about existence and morality.

9. Problem-Solving Scenarios

Present complex problem-solving scenarios to students for discussion with ChatGPT. Use the prompt: “You and I are members of a team facing a [complex problem]. Engage in a discussion to propose and evaluate potential solutions, considering the feasibility and ethical implications of each option.”

By engaging in this process collaboratively, students develop their problem-solving and decisionmaking abilities.

10. Language Learning

Students can practice new vocabulary, grammar, and sentence structures in foreign languages. Use the prompt: “Practice speaking in [target language] with me on a specific topic. Engage in a conversation using newly learned vocabulary and grammar structures and critically reflect on ways to improve my language skills.”

By formulating responses and analyzing a given language, students improve their com-

prehension and linguistic reasoning.

Finally, while ChatGPT can be a valuable discussion partner, it is crucial to guide students in evaluating the information and interpretations it provides. Encourage students to think critically about ChatGPT’s responses and consider the limitations and biases in AI-generated content.

A Districtwide Approach

Lakisha Brinson Thomas serves as the director of instructional technology for Metro Nashville Public Schools in Tennessee. In this role, she oversees and supports the use of instructional technology, digital learning, and computer science programming across 150 schools:

The utilization of artificial intelligence within our district is a topic that has generated a mix of enthusiasm, curiosity, and concerns within the K-12 education landscape worldwide. While AI has existed since 1956, the recent release of Chat GPT has triggered a wave of contemplation within the education sector regarding its safety, appropriateness for academic purposes, and the responsibilities of schools in harnessing its potential.

As an educational technology leader in a large school district, serving over 70,000 students, I am similarly grappling with these questions. As we forge a path ahead, the following road map will serve as our guide:

Establish a Steering Committee

Recognizing that AI implementation is not the sole responsibility of any one department, we are in the early stages of forming a districtwide steering committee. This committee will include district administrators, educators, and students, all of whom will play a vital role in defining AI’s role in our educational landscape.

Experiment with Available Tools and Resources

To effectively assess the advantages and potential pitfalls of AI, it is imperative to gain hands-on experience with the available tools. In our district, this would include prioritizing the use of “district-approved tools” such as Microsoft Bing (AI), Canva, and Minecraft, which provide a safe and secure way to engage with AI.

Establish Uniformity and Shared Understanding

Establishing clear processes and procedures ensures a unified understanding among all stakeholders. Our district typically creates a playbook that is distributed to the entire staff. This playbook would outline the vision of the

AI project/tool, details professional learning opportunities, and suggests actions that would demonstrate appropriate use of AI tools.

Listen and Learn

It is crucial to tap into the collective wisdom of other districts, subject-matter experts, and learning communities. In our district, this involves reading articles, participating in webinars, and inviting local college professors to share insights with our faculty and staff.

Set the Pace According to Needs

Avoid the pressure to have all the answers immediately. Prioritize actions based on the specific needs of students, educators, and school communities. In our case, we are focusing on enhancing the knowledge and understanding of our instructional technology team. This will enable them to engage in informed conversations with our steering committees and other stakeholders.

I draw encouragement from the collective intelligence within the education community. As we continue to evolve and expand our use of artificial intelligence in the classroom, we will learn and grow together.

Thanks to Amanda, Danielle, and Lakisha for contributing their thoughts! ■

Larry Ferlazzo is a former award-winning high school English and social studies teacher of more than two decades. He is currently a volunteer tutor to English-learner newcomers at a local school and to youth in juvenile hall.

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